

BASIC URANIUM-235 CRITICAL PARAMETERS

These basic values are taken from references which would normally be used as bases for standards. ARH-600 values compare favorably.

<u>METAL</u>	<u>Full Reflection*</u>	<u>Bare** (3)</u>
Minimum critical spherical mass, Kg ^{235}U 18.82 g/cm 3	21.85 (1)	
Minimum critical spherical mass, Kg ^{235}U (93.5) 18.8 g/cm 3	22.8 (2)	47.
Infinite cylinder diameter, inches, ^{235}U 18.82 g/cm 3	3.0 (1)	4.5
Infinite slab thickness, inches, ^{235}U 18.82 g/cm 3	0.586 (1)	2.2
Minimum spherical volume, liters, ^{235}U 18.82 g/cm 3	1.16 (1)	2.7
<u>HOMOGENEOUS SOLUTIONS (4)</u>		
Minimum critical mass, g ^{235}U	820	1400
Infinite cylinder diameter, inches	5.63	8.5
Infinite slab thickness, inches	1.93	4.5
Minimum spherical volume, liters	6.1	14.0
Minimum areal concentration g/ft 2	390	~520
Minimum critical aqueous concentration, g/l ^{235}U	12.1	
Minimum enrichment for criticality, Wt% ^{235}U ⁽⁵⁾	1.034 \pm 0.010	
Minimum enrichment for criticality for UNH solutions, Wt% ^{235}U ⁽⁶⁾	2.104 \pm 0.010	

* Reflector is water unless otherwise specified.

** "Bare" solutions have 1/16-inch stainless steel reflector.

(1) W. H. Roach and D. R. Smith. "Estimates of Maximum Subcritical Dimensions of Single Fissile Metal Units", ORNL-CDC-3, October, 1967, (reflected metal systems).

(2) G. A. Graves and H. C. Paxton. "Critical Masses of Oralloy Assemblies", Nucleonics 15, No. 6, 90, June, 1957, (bare metal systems).